

03050108-02
(Enoree River)

General Description

Watershed 03050108-02 (formerly 03050108-020, 030) is located in Spartanburg, Laurens, and Union Counties and consists primarily of the *Enoree River* and its tributaries from Beaverdam Creek to Duncan Creek. The watershed occupies 118,681 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 61.6% forested land, 25.7% agricultural land, 5.8% urban land, 3.4% forested wetland, 1.8% barren land, 1.1% scrub/shrub land, and 0.6% water.

This segment of the Enoree River accepts drainage from its upstream reach, together with Beaverdam Creek (Wallace Branch), Twomile Creek (Hannah Creek), Buckhead Creek, Warrior Creek (Double Branch, Strouds Branch), Enoree Creek, and Cedar Shoals Creek. Elishas Creek enters the river next followed by Frenchman Creek, Johns Creek (Wildcat Branch), Sispring Branch, and Hills Creek. The lower portion of the watershed resides within the Sumter National Forest. There are a total of 248.6 stream miles and 408.9 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-246	W/BIO/INT	FW	BEAVERDAM CREEK AT S-30-97, 7 MI NE OF GRAY COURT
B-041	P/W	FW	ENOREE RIVER AT SC 49, SE OF WOODRUFF
B-150	W/INT	FW	WARRIOR CREEK AT US 221, 8 MI NNE OF LAURENS
B-742	BIO	FW	WARRIOR CREEK AT SC 49
B-785	BIO	FW	CEDAR SHOALS CK AT UNNAME RD 0.2 KM ABOVE CONFL.W/ENOREE R.
B-053	W/INT	FW	ENOREE RIVER AT SC 72, 121, & US 176, 1 MI NE WHITMIRE
RS-03495	RS03	FW	ENOREE RIVER AT SC 72, 121, & US 176, 1 MI NE WHITMIRE

Beaverdam Creek (B-246) – Aquatic life uses are not supported based on macroinvertebrate community data and occurrences of copper in excess of the aquatic life chronic criterion. There is also a significant increasing trend in five-day biochemical oxygen demand. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Enoree River - There are two SCDHEC monitoring stations along this section of the Enoree River. At the furthest upstream site (*B-041*), aquatic life uses are fully supported. Significant decreasing trends in turbidity, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. At the downstream site (*B-053/RS-03495*), aquatic life is not supported due to occurrences of copper in excess of the aquatic life chronic criterion. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. A very high concentration of cadmium was measured in

the 2003 sediment sample. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Warrior Creek - There are two SCDHEC monitoring stations along Warrior Creek. At the furthest upstream site (**B-150**), aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the downstream site (**B-742**), aquatic life is fully supported based on macroinvertebrate community data.

Cedar Shoals Creek (B-785) – Aquatic life is fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD)</i>	<i>NPDES# TYPE COMMENT</i>
ENOREE RIVER RIVERDALE MILLS W&S DISTRICT PIPE #: 001 FLOW: 0.09	SC0035734 MINOR DOMESTIC
ENOREE RIVER TOWN OF WHITMIRE WTP PIPE #: 001 FLOW: M/R	SCG645046 MINOR DOMESTIC
ENOREE CREEK CAROLINA VERMICULITE/SUMMER PIPE #: 001 FLOW: M/R	SCG730013 MINOR INDUSTRIAL
DOUBLE BRANCH WR GRACE CO./DAVIS DEWITT MINE PIPE #: 001 FLOW: M/R	SCG730093 MINOR INDUSTRIAL
BUCKHEAD CREEK WR GRACE CO./WRIGHT #1 & #2 MINES PIPE #: 001 FLOW: M/R	SCG730097 MINOR INDUSTRIAL
ENOREE RIVER TRIBUTARY WR GRACE CO./TEMPLETON MINE PIPE #: 001 FLOW: M/R	SCG730223 MINOR INDUSTRIAL
CEDAR SHOALS CREEK WR GRACE CO./GIDEON MINE PIPE #: 001 FLOW: M/R	SCG730111 MINOR INDUSTRIAL
ENOREE RIVER TRIBUTARY WR GRACE CO./BOYD WHITMORE MINE PIPE #: 001 FLOW: M/R	SCG730088 MINOR INDUSTRIAL
ENOREE RIVER TRIBUTARY PATTERSON VERMICULITE MINE PIPE #: 001 FLOW: M/R	SCG730463 MINOR INDUSTRIAL

ENOREE RIVER TRIBUTARY CAROLINA VERMICULITE/DONNA1 MINE PIPE #: 001 FLOW: M/R	SCG730256 MINOR INDUSTRIAL
ELISHAS CREEK CAROLINA VERMICULITE/LAURENCE MINE PIPE #: 001 FLOW: M/R	SCG730147 MINOR INDUSTRIAL
WARRIOR CREEK WR GRACE CO./ENOREE SITE PIPE #: 002 FLOW: 0.012 PIPE #: 003 FLOW: M/R	SC0045811 MINOR INDUSTRIAL
BEAVERDAM CREEK CAROLINA VERMICULITE/WALDREP PIPE #: 001 FLOW: M/R	SCG730071 MINOR INDUSTRIAL
BEAVERDAM CREEK VULCAN MATERIALS CO./GRAY COURT PIPE #: 001 FLOW: M/R	SCG730055 MINOR INDUSTRIAL
ENOREE RIVER DORCHESTER DIRT CO./ARROWHEAD PIPE #: 001 FLOW: M/R	SCG731025 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
UNION COUNTY REGIONAL MSWLF MUNICIPAL	422441-1101 ACTIVE
HIGHWAY 92 C&D C&D	PROPOSED -----
NATIONAL STARCH INDUSTRIAL	423344-1601, 422433-1601 CLOSED
HR GARRETT, INC. C&D	302499-1701 INACTIVE
SOUTHEASTERN ASSOCIATES - LAURENS INDUSTRIAL	302428-1201 INACTIVE

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
CAROLINA VERMICULITE NUMBER 8 MINE	1034-59 VERMICULITE
CAROLINA VERMICULITE BROWN #2 MINE	0623-83 VERMICULITE
CAROLINA VERMICULITE SUMNER MINE #1	0754-83 VERMICULITE

WR GRACE & CO. BOYD-WHITMORE MINE	1118-59 VERMICULITE ORE
CAROLINA VERMICULITE DONNAN #1 MINE	1164-59 VERMICULITE
PATTERSON VERMICULITE CO. PATTERSON #3 MINE	0048-59 VERMICULITE
WR GRACE & CO. GIDEON MINE	0833-83 VERMICULITE
RAY BROWN ENTERPRIZES WILLIAMS SAND PIT	1373-59 SAND
CAROLINA VERMICULITE LAURENCE MINE	1048-87 VERMICULITE ORE
CAROLINA VERMICULITE CHARLES WALDREP	0970-59 VERMICULITE
VULCAN CONSTRUCTION MATERIALS LP GRAY COURT QUARRY	0061-59 GRANITE
WR GRACE & CO. WRIGHT NO. 1 & 2	0278-59 VERMICULITE
WR GRACE & CO. TEMPLETON MINE	1160-59 VERMICULITE
WR GRACE & CO. DAVIS-DEWITT MINE	1018-59 VERMICULITE ORE

Water Quantity

<i>WATER USER STREAM</i>	<i>REGULATED CAP. (MGD) PUMPING CAP. (MGD)</i>
CITY OF CLINTON ENOREE RIVER	6.0 10.4
TOWN OF WHITMIRE ENOREE RIVER	1.0 2.2

Growth Potential

There is a low potential for growth in this watershed, which contains the Towns of Enoree and Gray Court. The watershed is bisected by I-26 and I-385 and some growth may be expected around the interstate interchanges. Growth may also be associated with industrial development along U.S. Hwy. 221. A commercial corridor has developed along U.S. Hwy. 176 and S.C. Hwy. 72 located in the lower region of the watershed, which serves the Whitmire community. Public water is available, but little growth is expected.

Watershed Protection and Restoration Strategies

Total Maximum Daily Loads (TMDLs)

TMDLs were developed for SCDHEC and approved by EPA for fecal coliform bacteria in the middle section of the **Enoree River** at water quality monitoring sites **B-041** and **B-053**. The upstream half of this section of has a number of mines; the lower half is in the Sumter National Forest. This section of the river has one NPDES discharger, Riverdale Mills Water & Sewer District (SC0035734), which is permitted to discharge fecal coliform bacteria. The Enoree in this reach is not within a Municipal Separate Storm Sewer System (MS4) designated area. Possible sources of fecal coliform bacteria in this section of the Enoree River include upstream sources, leaking sewers, failing onsite wastewater disposal systems, cattle in creeks, pets, and wildlife. The TMDL specifies a reduction in the load of fecal coliform bacteria into the Enoree River of 36% (B-041) and 29% (B-053) in order for the river to meet the recreational use standard.

TMDLs were developed for SCDHEC and approved by EPA for fecal coliform bacteria in **Beaverdam Creek** at water quality monitoring site **B-246**. There are no facilities that have fecal coliform limits in their NPDES permits that discharge in to the creek. The watershed is not within a MS4 designated area. Possible sources of fecal coliform bacteria in Beaverdam Creek include failing onsite wastewater disposal systems, cattle in the creeks, urban residential runoff, pets, and wildlife. The TMDL specifies a reduction in the load of fecal coliform bacteria into Beaverdam Creek of 31% in order for the creek to meet the recreational use standard.

TMDLs were developed for SCDHEC and approved by EPA for fecal coliform bacteria in **Warrior Creek** at water quality monitoring site **B-150**. There are no facilities that have fecal coliform limits in their NPDES permits that discharge in to the creek. The watershed is not within a MS4 designated area. Possible sources of fecal coliform bacteria in Warrior Creek include failing onsite wastewater disposal systems, cattle in the creeks, urban residential runoff, pets, and wildlife. The TMDL specifies a reduction in the load of fecal coliform bacteria into Warrior Creek of 67% in order for the creek to meet the recreational use standard.

Funding for TMDL implementation activities is currently available. For more information, see the Bureau of Water web page www.scdhec.gov/water or call the Watershed Program at (803) 898-4300.

Special Projects

TMDL Implementation for the Enoree River Basin

Twenty-three water quality monitoring stations in the Enoree River basin have been placed on the South Carolina §303(d) list of impaired waters for violations of the fecal coliform bacteria standard. The 730 square mile basin is composed of mostly forest (70%) with some pastureland (10%) and cropland (10%). The basin has several municipalities that have or may receive Municipal Separate Storm Sewer System (MS4) permits. There are 10 active continuous point sources discharging fecal coliform bacteria in the Enoree River basin of South Carolina. The Project addresses several strategies for TMDL implementation through the development and promotion of measures focused at reducing fecal coliform contamination from non-point sources. Clemson University has partnered with the Natural Resource Conservation Service, the Soil and

Water Conservation District and the Cattlemen's Association of five counties to implement a fecal coliform TMDL for the Enoree River. This three-year project seeks to reduce the amount of fecal coliform bacteria at ten DHEC water quality monitoring stations so that water quality standards will be met. Clemson is leading the effort by educating property owners on proper septic system maintenance as well as best management practices to reduce bacteria coming from agricultural areas. They have also hosted River Sweeps and educational programs for school-aged children across the watershed. In addition to these educational efforts, project staff are recruiting landowners to install best management practices on farms and to repair failing septic systems within the watershed. It is anticipated that the behavior changes resulting from this project's educational efforts, combined with the best management practices throughout the watershed will reduce the fecal coliform loading to the Enoree River as called for by the TMDL.